IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Carter, *et al.*

Serial No.: 09/924,110

Filed: August 7, 2001

For: "MATERIALS AND METHODS FOR IMPROVED BONE TENDON BONE TRANSPLANTATION"

Group Art Unit: 3738

Examiner: Alvin J. Stewart

CERTIFICATE OF EXPRESS MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this:

March 28, 2005

Donald J. Pochopien
Registration No. 32,167
Attorney for Applicants

DECLARATION UNDER 37 C.F.R. § 1.132 OF BRAD J. LARSON, M.D.

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I Brad J. Larson, M.D. declare as follows:

1. A true and correct copy of my curriculum vitae is attached hereto as Exhibit A.

2. I received an M.D. degree from the University of Utah College of Medicine, Salt Lake City in 1982. Thereafter, I performed an orthopaedic residency at Loyola University Medical Center and affiliated hospitals, Maywood IL from 1982-1987. See Exhibit A

3. I am a practicing orthopedic surgeon for the last 18 years. I have worked on many research projects involving anterior cruciate ligament (ACL) reconstruction. I

helped develop one of the early prototypes of cross-pin fixation. This result was published in ("Cross-Pin Femoral Fixation: A New Technique for Hamstring Anterior Cruciate Ligament Reconstruction of the Knee," Arthroscopy: The Journal of Arthroscopy and Related Surgery, 14(3): 258-267 April 1998.) I have been a member of the Arthroscopy Association of North America since 1994. See Exhibit A.

4. Based upon my education and experience, I consider myself to be a person of ordinary skill in the art of arthroscopy, and in knee and ligament reconstruction in humans.

5. I have reviewed the specification of the above-identified patent application, the rejected claims, the Official Action of 09/28/04 and the cited art. I understand their contents. Specifically, I understand that the Patent Office has rejected claims 1, 2, 4, 8, 9, and 31-40 under 35 U.S.C. §103(a) for being allegedly unpatentable over U.S. Pat. 5,067,962 ("Campbell") in view U.S. Pat. 5,961,520 ("Beck"). According to the Patent Office, Campbell discloses a "xenograft replacement ligament comprising a bone-ligament-bone attachment with a naturally occurring [ligament to bone] attachment (see abstract and Fig. 3)" and that "Figure 3 discloses bone blocks shaped into a dowel." [Official Action at page 2.] The Patent Office acknowledges that "Campbell et al does not disclose a groove along the length of each bone block." [Official Action at page 2.] The Patent Office then cites to Beck and states that Beck "discloses an artificial ligament comprising an anchoring system made of bone (see col. 6, lines 36-39) and having a groove along the length (see Fig. 2, see element 17) for the purpose of inserting an attachment screw and attach the attachment system to the patient's bone." [Official Action at page 2.] The Patent Office goes on to conclude that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bone blocks of the Campbell et al reference with **the longitudinal groove (see surface 17) of the Beck, Jr. et al. reference,**

in order to insert an attachment screw and attach the attachment system to the patient's bone." [Official Action at pages 2-3 (bridging sentence).] I disagree.

6. At the filing date of the present application, there were two techniques for performing anterior cruciate ligament repair. The original and oldest technique required an "**open**" knee incision wherein the bottom plate of the femur and the top plate of the tibia were disarticulated from one another to reveal their opposing inner surfaces. In this technique, the physician would drill a hole a predetermined distance into the opposing plates of the femur and the tibia. Thereafter, he would insert a bone plug shaped for each hole. Because of the extensive trauma to the knee imposed by this technique, a long recovery time was required. This is the technique and the associated implant disclosed in Campbell.

A second and less invasive technique is the **endosteal** technique. This technique leaves the knee joint intact and uses an endoscope to drill a hole up through the tibia into the femur. See Exhibit B: U.S. Pat. 5,393,302 at FIG. 6 at element 34 ("femoral tunnel section") and Exhibit C: U.S. Pat. 6,306,168 at FIGs 10 and 11 at element 10 ("femoral tunnel"). A tendon or a bone-tendon-bone (BTB) graft having a diameter slightly less than the femoral bone tunnel is then slid up into the tunnel, positioned, tensioned and then fixed. This is the technique and the associated implant disclosed in Beck.

7. As stated in ¶ 4 of my declaration, I was a person skilled in the art of arthroscopy and knee and ligament reconstruction before the filing dates of Campbell (1989) and Beck (1993) and up through the present. Upon reviewing U.S. Pat. 5,067,962 ("Campbell") as a person skilled in the art, it is apparent that Campbell discloses a xenograft BTB comprising a ligament having two opposing ends and a frustoconical-shaped bone block naturally attached to each of the opposing ends the ligament. Campbell is very specific in stating that the purpose of his invention is retain the "**natural**" ligament to bone attachment in the donor tissue and to implant the bone piece at the recipients "**natural attachment site**":

> This invention solves the problems outlined above with a xenograft, glutaraldehyde-preserved, replacement ligament that is harvested to retain a piece of donor bone in order to keep the **donor's natural attachment site intact**. Implantation of the bone piece **at the recipient's natural attachment site** results in a bioprosthetic ligament that has a **natural ligament-to-bone attachment** located **at the natural attachment site**, and this overcomes many problems of existing ligament prostheses.
>
> Generally, a method of attaching a replacement ligament according to a major aspect of the invention includes providing a ligament of suitable size and strength that has been harvested from a donor animal. The ligament has first and second end portions, and it is harvested so that at least a first bone piece remains attached to the first end portion in order to preserve intact a substantial portion of a **first natural ligament-to-bone attachment structure** of the donor animal at the first end portion.
>
> The first bone piece is **attached to a first bone of the patient at the natural attachment site** on the first bone and the second end portion of the ligament is attached to a second bone of the patient.
>
> The ligament may be harvested with a bone piece at each end. In addition, it may be tanned and processed with a glutaraldehyde solution, the bone pieces may be implanted in recesses formed in the bones of the patient at the natural attachment sites, and the bone pieces may be pinned in place. **In these ways, the surgeon can more closely replicate the natural attachment structures being replaced**.
>
> [Campbell at col. 1, line 61 to col. 2, line 24; emphasis added in bold.]

8. Campbell expressly teaches away from using implants that require laparoscopy and endosteal bone tunnels. In particular, Campbell begins by teaching that "**success depends upon proper attachment to host bone**":

> Replacement ligaments can restore performance where native structures rupture beyond repair. But **success depends on proper attachment to the host bone**. Thus, the **manner** in which this is done and the related **details of prosthesis construction** are **important**.
>
> [Campbell at col. 1, lines 13-17; emphasis added in bold.]

In another sentence of the same paragraph, Campbell teaches that the "manner" of implantation, as well as the "**details of prosthesis construction** are **important**." By saying that the "manner" of implantation and the "**details of prosthesis construction** are **important,**" Campbell was closing his changes in prosthesis construction that would alter the inventive aspects features invention.

One of the "manners" of implantation that Campbell specifically taught away from was the use of endosteal tunnels drilled in the bone. In particular, Campbell teaches that the use of endosteal tunnels result in ligament stretch, impaired performance, spicules that abrade ligaments, and synovial fluid in the intraosseous space:

> Consider, for example, an injured knee joint having a damaged anterior cruciate ligament. Attachment of a replacement ligament according to **existing techniques** may involve **forming tunnels** in the **femur and tibia (the host bones)**. The tunnels are formed so that each extends through one of the host bones from an entrance or proximal end of the tunnel at the natural ligament attachment site to an exit or distal end of the tunnel at an outer surface of the host bone.
>
> Each end of the replacement ligament is passed through one of the tunnels, from the proximal end to the distal end where it is anchored to the outer surface of the host bone by such means as stapling. This results in the replacement ligament spanning the intra-articular region between the natural attachment sites somewhat like a natural ligament, but it also results in certain problems that need to be overcome.
>
> For example, the **replacement ligament extends beyond the natural attachment sites** and **all the way through the tunnels** to the outer surfaces on the other side of each host bone. This **results in the replacement ligament being able to stretch over a greater length than a natural ligament** (from the outer surface of the femur to the outer surface of the tibia), and this **impairs performance**.
>
> In addition, **formations** such as **bone spicules** can form at the entrance to each of the tunnels. These tend to **abrade the replacement ligament**, cause **fatigue** of the material, and break off particles which can cause **irritation**.

> Furthermore, the **tunnels** provide access to the host bone interior. As a result, **synovial fluid can migrate from the intra-articular region between host bones into the bone tunnels**. Thus, any activity in the intra-articular region, such as **infection**, can be easily **communicated** into the bone interior and result in **intra-osseous complications**. Similarly, activity within the bone can be easily communicated to the intra-articular region.
>
> Consequently, it is desirable to have a **new** and improved **replacement ligament** and **attachment method** that overcomes these concerns.
>
> [Campbell at col. 1, lines 18-58; emphasis added in bold.]

In the last sentence of the above quote, Campbell teaches that both his "**replacement ligament**" (*i.e.*, BTB) and the "**attachment method**" are required to overcome these concerns. Thus, Campbell teaches away from the use of endosteal tunnels and endosteal fixation.

9. It is my opinion and conclusion that Campbell's replacement ligament (BTB) is so large that it could never be implanted endosteally. The recipient site would have to be prepared through an **open** arthrotomy incision and the donor graft would be so large that it would have to be placed through a large incision as well.

10. It is my opinion that adding grooves to each of the "bone plugs" of Campbell's replacement ligament (BTB) so that each "bone plug" could be fixed with an interference screw would defeat the expressly stated object of Campbell's invention. Campbell wants to maintain the natural attachment site of the ligament so he fixates the graft transversely by placing a "stainless steel pin" through each of the bone plugs and the patient's bone into which they are anchored. [Campbell at FIG. 4 and at col. 4, lines 26-40 discussing FIG. 4.] If one skilled in the art adheres to Campbell's "manner of attachment," which Campbell says is "important" [Campbell at col. 1, lines 16-17], that skilled person would never think of using any type of interference fixation. An interference fixation, by definition, would interfere between the graft and the host tissue. Specifically,

placing a interference screw between the donor bone (even if grooved) and the recipient bone would displace the donor bone away from the recipient bone at that point and defeat the natural attachment which Campbell teaches as "important." Moreover, when the interference screw pushes the donor bone away from the recipient bone at the screw site, it would allow synovial fluid to enter the intraosseous space, thereby defeating Campbell's solution to this problem.

11. Assuming that one skilled in the art wanted to implant the BTB of Campbell that was modified to include grooves for interference screws, it would require a combination of techniques that was neither taught or suggested in Campbell or Beck. Rather, the combination was negated by the teachings in both Campbell and Beck. An interference screw could theoretically be positioned through an endosteal tunnel and then screwed in between the groove on the donor bone plug and the recipient bone to fix the donor bone plugs (albeit poorly). However, this method is expressly taught away from by Campbell because the synovial fluid would flow unabated into the open endosteal tunnels.

12. So, therefore if I were to adhere to the essence of the concepts presented in Campbell, and Campbell's important "manner" of implantation, I would perform an open arthrotomy incision (a large incision), not use endosteal tunnels, and fixate the graft transversely, as did Campbell.

13. There is no way I could perform the entire procedure of Campbell arthroscopically and I would not want to use interference fixation - even given the advances and choices of fixation offered today - regardless of whether or not each of the bone plugs of the graft had a groove on it.

14. The second reference, Beck, is entitled "Endosteal Anchoring Device For Urging A Ligament Against A Bone." On its face, the "manner" of implantation disclosed in Beck is "endosteal" and uses "bone tunnels." [See also Beck at col. 6 line 33 ("a bone tunnel is generally formed in the femur and/or tibia for

positioning the natural or synthetic ligament graft therein.")] Thus, the manner of implantation taught in Beck is manner that is expressly taught away by Campbell. Secondly, as Beck's title reflects, Beck's invention is directed to "urging a ligament against a [recipient] bone." However, Beck's invention was directed to making a natural bone-to-bone (donor bone to recipient bone) connection. [See Campbell at FIG. 4.] In fact, Campbell taught away from having the donor tendon contact the recipient bone in the bone tunnel, stating: "In addition, **formations** such as **bone spicules** can form at the entrance to each of the tunnels. These tend to **abrade the replacement ligament**, cause **fatigue** of the material, and break off particles which can cause **irritation**." [Campbell at col. 1, lines 43-47; emphasis added in bold.] Thus, on their face, the "manner" and strategy for implantation disclosed in Campbell and Beck are opposites.

15. Beck teaches a soft tissue graft fixated endosteally with an "endosteal anchoring device is manufactured from a material suitable for sterilization and human implantation and comprised of either a permanent non-biodegradable material or a biodegradable material capable of being absorbed by the body while maintaining the essential rigid qualities required to accommodate its anchoring functions." [Beck at col. 6, lines 42-48.] The endosteal anchoring devices of Beck are complicated; they have spikes on them (FIGS. 4, 7 and 10), are formed 3-dimensionally, and expand (FIG. 10). Beck does not disclose how to make his devices, particularly out of bone. Given the thought processes in 1999 and the current technology today, it would be difficult, if not impossible, to manufacture Beck's devices out of bone. So, Beck is using endosteal fixation, but not directly placing a screw or threaded device against the graft to avoid "damage to the cross-fibers of the ligament or tissue." Beck's groove is on his foreign fixation device and not his graft – another major difference.

16. From the view of one skilled in the art, Campbell and Beck are disclosing implantable devices for use in very different manners of implantation, where such manners of implantation are "important," to solve very different problems. It is

my opinion and conclusion, as a person skilled in the art, that it would not have been obvious to take the groove feature of Beck's endosteal anchor and add it to the bone plugs of Campbell to create an invention that neither teaches how to use, nor how to solve the new problems created.

17.
12. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

By _____
Brad J. Larson, M.D.

Dated: March 25, 2005

CURRICULUM VITAE

Brad J. Larson, M.D.
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No. Logan, UT 84341
(435) 787-2000

EDUCATION

Orthopaedic Residency	Loyola University Medical Center and affiliated hospitals, Maywood, IL, 1982 through 1987
Doctor of Medicine	University of Utah College of Medicine, Salt Lake City, UT, 1982
Postgraduate studies in health	University of Utah, Salt Lake City, UT, 1976 through 1978
Bachelor of Science, Psychology	University of Utah, Salt Lake City, UT, 1976

ADDITIONAL TRAINING

Carticel Service Certification – Comprehensive training in autologous chondrocyte transplantation - 1997

Cryolife Meniscus Reconstruction Training Program – Comprehensive training in allograft meniscal transplantation - 1998

Surgical Skills Training Center, Scottsdale, AZ – Advanced surgical treatments of shoulder instability and rotator cuff tears - 2002

Unicompartmental and Patellar – Femoral Joint Arthroplasty Training, Scripps Orthopaedic Institute, San Diego, CA – 2002

Mini-Incision Total Hip Arthroplasty Training, Johns Hopkins University - 2002

PROFESSIONAL SOCIETIES

Recertification Requirements completed of the American Board of Orthopaedic Surgery through 12/31/2009

Diplomat - American Board of Orthopaedic Surgery, July 1989

Member - American Academy of Orthopaedic Surgeons

Member - Arthroscopy Association of North America

Member - Western Orthopaedic Association

Member – International Cartilage Repair Society

Member – American College of Sports Medicine

Member - Cache Valley Medical Association

PRACTICE EXPERIENCE

Partner Orthopaedic Surgery	Alpine Orthopaedic Specialists 2380 North 400 East – Suite A No. Logan, UT January 1998 – Present
Private Practice Orthopaedic Surgery	850 East 1200 North – Logan, UT December 1989 – December 1997
Private Practice Orthopaedic Surgery	Budge Clinic 225 East 400 North – Logan, UT July 1987 - December 1989.
Team Physician	Utah State University Athletic Department - Logan, UT December 1989 - Present
Orthopaedic Consultant	Utah Department of Health Family Services Handicapped Children's Service Division 1987 – Present
Medical Staff Physician	World Pro Ski Tour 1994 - 1999
Emergency Room Physician	Alexian Brothers Medical Center Elk Grove Village, IL 1984 - 1987
House Physician	Elmhurst Memorial Hospital Elmhurst, IL 1983 - 1987
Team Physician	Westmont Sentinels, Westmont High School Westmont, IL 1983 – 1984
Orthopaedic Consultant (Disability Assessment)	Hines Veterans Administration Hospital Hines, IL 1985 - 1987

HOSPITAL AFFILIATIONS

Cache Valley Specialty Hospital	No. Logan, UT
Logan Regional Hospital	Logan, UT
Bear River Valley Hospital	Tremonton, UT
Primary Childrens Hospital	Salt Lake City, UT
Franklin County Medical Center	Preston, ID
McKay Dee Hospital	Ogden, UT

RESEARCH

Multicenter, double-blind, placebo-controlled, randomized study of the analgesic efficacy, safety and tolerability of Valdecoxib 40mg QD over 7 days in patients undergoing anterior cruciate ligament reconstruction.

Radiation exposure during fluoroarthroscopically-assisted hamstring anterior cruciate ligament reconstruction. Jan 2002 – Mar 2003

The Computerized Back Therapist – Evaluation, development, design and marketing of a new, patented machine to treat low back pain conditions. Work performed for RDH Enterprises, LLC. 1999 - Present

Bicycle seat designs and their effect on pelvic angle, trunk angle and perineal comfort in females during cycling. Work performed with Eadric Bressel, EdD, at the Biomechanics Laboratory, HPER Dept, Utah State University. 2002

Design and medical analysis of the new "millennial crutch." Work in progress with Millennial Medical Devices, LLC. Patent pending. 2002

Development and analysis of the duracongruent polyethylene tibial insert for total knee arthroplasty. Work completed and FDA approval pending. Developed in conjunction with Stryker Howmedica Osteonics, Inc. 2001-2002

Ergonomic evaluation of kayak paddle design. Investigation into the biomechanical analysis of kayak paddle shaft, grip and blade design. Work in progress. 2000 - Present

"Balloon Carpal Tunnelplasty – A prospective, randomized multicenter FDA-sanctioned investigation of the safety and efficacy of a balloon carpal tunnelplasty system."

"A double-blind comparison of the efficacy and safety extended outpatient treatment with subcutaneous Normiflo versus Placebo for the prevention of venous thromboembolism in patients after hip or knee replacement surgery," September 1993

"A double-blind dose-ranging comparison of the safety and efficacy of subcutaneous Normiflo versus Placebo for the prevention of deep-vein thrombosis in patients undergoing knee replacement surgery," August 1992

"Comparison of the efficacy and safety of subcutaneous RD Heparin versus Oral Warfarin for the prevention of deep-vein thrombosis in patients undergoing unilateral elective knee or hip replacement surgery," April 1990

"The Role of Gore-Tex Expanded PTFE Prosthetic Suture in Knee Ligament Repair," Department of Orthopaedics and Rehabilitation, Loyola University Medical Center, Maywood, IL, 1984.

"Dapsone Induced Hemolytic Anemia in the Management of Dermatitis Herpetiformis," University of Utah College of Medicine, Salt Lake City, UT, 1980.

"The Results of High Risk Indexing in an M & I Project," State of Utah Department of Health, Division of Family Health Services, Salt Lake City, UT, 1976.

"Imagery in the Associative Learning of Schizophrenics," Department of Psychology, University of Utah, Salt Lake City, UT 1976.

PUBLICATIONS

Larson, B.J., DeLange, L.C.: "Fluoroscopically Assisted ACL Reconstruction: Radiation Exposure and Evaluation of its Role." Submitted to Journal of Arthroscopy

Bressel, E., Larson, B.J.: "Bicycle Seat Designs and Their Effect on Pelvic Angle, Trunk Angle and Perineal Comfort in Females During Cycling." Pending

Larson, B.J., DeLange, L.C.: "Traumatic Volar Dislocation of the Trapezoid with Acute Carpal Tunnel Syndrome," A Case Report and Review of the Literature. Accepted for publication in Orthopaedics.

Larson, B.J., Bressel, E.: "Radiographic Analysis of the Wrist while Gripping a Kayak Paddle." Abstract - IV World Congress of Biomechanics; Calgary, Alberta. August 2002

Clark, R., Olsen, R.E., Larson, B.J., Goble, E.M., and Farrer, R.P.: "Cross Pin Femoral Fixation: A New Technique for Hamstring ACL Reconstruction of the Knee," The Journal of Arthroscopic and Related Surgery, Vol. 14, No. 3, April 1998: pp. 258-267.

Larson, B.J., Davis, J.: "Trampoline Related Injuries," The Journal of Bone and Joint Surgery, Vol. 77-A, No. 8, August 1995.

Larson, B.J., Egbert, J., and Goble, E.M.: "Radiation Exposure During Fluoroarthroscopically Assisted Anterior Cruciate Reconstruction." The American Journal of Sports Medicine, Vol. 23, No. 4, July 1995.

Larson, B.J., Pinzur, M.S., Knight, G., and Patwardhan, A.: "Quantitative Analysis of Suture Selection in Ligamentous Repair: A Preliminary Report in a Canine Model," Loyola University, Chicago. Orthopaedic Journal. Vol. 1, 1992.

Larson, B.J., Kuo, K., and Miller, E.A.: "Management of Rigid Talipes Equinovarus in Arthrogryposis," Orthopaedic Transactions, Vol. No. 1987.

Norbeck, D., Larson, B. J., Blair, S., and Demos, T.: "Traumatic Longitudinal Disruption of the Carpus," Journal of Hand Surgery Vol. 12 A, No. 4, July 1987.

Larson, B.J., Pinzur, M.S. and Knight, G.: "Quantitative Analysis of Suture Selection in Ligamentous Repair. A Canine Model," Orthopaedic Transactions. Vol. 10, No. 4, July 1987.

Larson, B.J., Light, T.R., and Ogden, J.A.: "Nonunion and Ischemic Necrosis of the Ossifying Scaphoid," Journal of Hand Surgery Vol. 12, January 1987.

Larson, B.J., Zindrick, M., Schwartz, C., and Demos, T.C.: "Postoperative Dislocation of a Total Hip Prosthesis Due to a Surgical Drain," American Journal of Radiology. No. 149, November 1987.

Dobozi, W.R., Larson, B.J., Zindrick, M., Davenport, K., Hall, R. F., Whitelaw, G., Hadley, N., and Segal, D.: "Flexible Intramedullary Nailing of Subtrochanteric Fractures of the Femur: A Multicenter Analysis," Clinical Orthopaedics and Related Research No. 212, November 1986.

Larson, B. J., Zindrick, M., and Dobozi, W.R.: "Flexible Intramedullary Nail Fixation of Subtrochanteric Fractures of the Femur," Orthopaedic Transactions Vol. 8, No. 3, December 1984.

Kalimuthu, R., Larson, B.J., and Lewis, N.: "Ear Lobe Repair: A New Technique," Plastic and Reconstructive Surgery. Vol. 74, No. 2. August 1984.

PRESENTATIONS

"Unicompartmental Knee Arthroplasty." Cache Valley Specialty Hospital Winter Retreat, February 2003

"Medical Management of Arthritis in Lower Extremities." Joint Replacement and Arthritis Seminar, June 2002

"Evaluation and Treatment of Knee Injuries: The Road for Returning to Play," Cache Valley Sports Education, Spring Seminar, August 5, 2000.

"Carpal Tunnel Balloonplasty," Aired on NBC National Television, June 22, 2000. Reported by Lucky Severnson.

"A Proven Drug-Free Option to Osteoarthritis Pain Relief: Synvisc (Hylan G-F 20)," Guest speaker at Wyeth-Ayerst Labs Meeting, June 1999

"Total Hip and Knee Replacement," Health Aspects of Aging Seminar, June 1999

"Overview of Sports Related Injuries," Mountain West Winter Retreat, 1997.

"Surgical Approaches and Techniques of the Shoulder Joint," Mountain West Winter Retreat, 1996

"Common Orthopaedic Sports Injuries in the Pediatric Patient," The Pediatric Orthopaedic Workshop; Primary Children's Medical Center, July 1995.

"Upper Extremity Injuries in Seniors," Health Maintenance and Fracture Prevention in the Senior Citizen, July 1995.

"Trampoline Related Injuries," Mountain West Winter Retreat, February 1995.

"Trampoline Related Injuries," Western Orthopaedic Association, 58th Annual Meeting, August 1994.

"Rationale Underlying Flexor Tendon Rehabilitation," Mountain West Winter Retreat, March 1991.

"Sport Related Injuries," Northern Utah Emergency Medical Technicians Conference, 1991.

"Management of Rigid Talipes Equinovarus in Arthrogryposis," 20th Annual American Orthopaedic Association Resident's Conference, March 1987.

"Quantitative Analysis of Sutures Selection in Ligamentous Repair: A Canine Model," 1996 Annual Meeting of the Illinois Orthopaedic Society, September 1986.

"Quantitative Analysis of Suture Selection in Ligamentous Repair. A Canine Model," 19th Annual American, Orthopaedic Association Resident's Conference, May 1986.

"Flexible Intramedullary Nailing of Subtrochanteric Fractures of the Femur: A Multicenter Analysis," Poster Exhibit and Presentation at the 53rd Annual Meeting of the American Academy of Orthopaedic Surgeons, February 1986.

"The Role of Gore-Tex Expanded PTFE Prosthetic Suture in Knee Ligament Repair," Poster Exhibit at the Orthopaedic Research Society 32nd Annual Meeting, February 1986.

"Flexible Intramedullary Nail Fixation of Subtrochanteric Fractures of the Femur," 17th Annual American Orthopaedic Association Resident's Conference, May 1984.

Numerous community lectures covering a variety of medical topics.

PROFESSIONAL AFFILIATIONS

Managing Partner of Autologous Investment and Research, LLC

Medical Consultant for RDH Enterprises, LLC

Orthopaedic Consultant for Stryker Howmedica Osteonics, Inc

Orthopaedic Consultant for Regeneration Technologies, Inc

Partner of Millenial Medical Equipment, LLC

Orthopaedic Consultant for Medicine Lodge, Inc

Partner of G-Rip H2O, LLC

PATENTS

Ergonomic Paddle Grip – Patent No. US 6,537,117 B1

Ergonomic Collapsible Crutch – Patent Pending

OTHER

Managing Partner – Alpine Orthopaedic Specialists
2002 – 2003

Regional Fund Raising Chairman - Orthopaedic Research and Education Foundation
(Member of the Order of the Merit) 1993 - 1995

Chairman, Department of Surgery - Logan Regional Hospital, Logan, UT
January 1995 - December 1996

Medical Instructor, Beaver Mountain Ski Patrol - Beaver Mountain, UT

Managing Partner, Western Orthopaedics and Sports Medicine
1997 - 1999

Board Member, Western Medical, Inc.
1997 - 2004

CONTINUING MEDICAL EDUCATION

Available upon request

REFERENCES

Available upon request